

## CLAIMS:

1. A substrate comprising [comprised of] olive oil waste as the nutrient for growth of edible and medicinal shiitake mushrooms (*Lentinus edodes*).
- 5 2. A substrate according to claim 1 comprising a vegetative waste and olive oil waste.
3. A substrate according to claim 2 wherein the vegetative waste consists essentially of cellulosic and lignin-containing materials.
4. A substrate according to claim 3 wherein the cellulosic and lignin-  
10 containing materials are selected from the group consisting of cereal straw, sawdust, grass hay, alfalfa hay, cottonseed meal, corncobs and mixtures thereof.
5. A substrate according to claim 4 wherein the cereal straw is wheat straw.
6. A substrate according to claim 2 further comprising a mineral fertilizer.
7. A substrate according to claim 6 wherein said mineral fertilizer is gypsum.
- 15 8. A substrate according to claim 1 comprising wheat straw, olive oil waste, and gypsum.
9. A substrate according to claim 8 comprising about 50-80% of wheat straw on a dry weight basis, about 20-50% by weight of olive oil waste, and about 2-10% by weight of gypsum.
- 20 10. A substrate according to claim 8 comprising about 50-70% wheat straw, about 30-50% olive oil waste, and about 5-10% gypsum.
11. A substrate according to claim 8 comprising about 50-60% wheat straw, about 30-40% olive oil waste, and about 5-10% gypsum.

12. A substrate according to claim 11 comprising about 57% of wheat straw, about 37% of olive oil waste, and about 6% of gypsum.

13. A substrate according to claim 1 for growing the shiitake mushroom strain Ile-1, a new and distinct variety of the species *Lentinus edodes* deposited under The  
5 Budapest Treaty with the Centraalbureau voor Schimmelcultures (CBS) under Accession No. CBS 112269.

14. A method for production of edible and medicinal shiitake mushrooms, which comprises growing the mushrooms aseptically in plastic bags on a sterilized substrate containing olive oil waste as the nutrient.

10 15. The method according to claim 14 wherein the substrate contains vegetative waste and olive oil waste.

16. The method according to claim 15 wherein the vegetative waste consists essentially of cellulosic and lignin-containing materials.

17. The method according to claim 16 wherein the cellulosic and lignin-  
15 containing materials are selected from the group consisting of cereal straw, sawdust, grass hay, alfalfa hay, cottonseed meal, corncobs, and mixtures thereof.

18. The method according to claim 17 wherein the cereal straw is wheat straw.

19. The method according to claim 14 wherein the substrate comprises a vegetative waste, olive oil waste, and a mineral fertilizer.

20 20. The method according to claim 19 wherein said mineral fertilizer is gypsum.

21. The method according to claim 20 wherein said substrate comprises wheat straw and olive oil waste.

22. The method according to claim 21 wherein said substrate comprises about  
25 50-80% of wheat straw on a dry weight basis, about 20-50% by weight of olive oil waste, and about 2-10% by weight of gypsum.

23. The method according to claim 22 wherein said substrate comprises about 50-70% wheat straw, about 30-50% olive oil waste, and about 5-10% gypsum.

24. The method according to claim 23 wherein said substrate comprises about 50-60% wheat straw, about 30-40% olive oil waste, and about 5-10% gypsum.

5 25. The method according to claim 24 wherein said substrate comprises about 57% of wheat straw, about 37% of olive oil waste, and about 6% of gypsum.

26. The method according to claim 14 wherein the shiitake mushroom is the strain Ile-1, a new and distinct variety of the species *Lentinus edodes* deposited under The Budapest Treaty with the Centralbureau voor Schimmelcultures (CBS)  
10 under Accession No. CBS 112269.

27. The method according to claim 25 wherein the shiitake mushroom is the strain Ile-1, a new and distinct variety of the species *Lentinus edodes* deposited under The Budapest Treaty with the with the Centralbureau voor Schimmelcultures (CBS) under Accession No. CBS 112269.

15 28. A method for the cultivation of edible and medicinal shiitake mushrooms which comprises:

(i) producing a substrate from a mixture of wheat straw, olive oil waste, and gypsum and wetting the mixture by the addition of water to a moisture content of between about 60 and 75%;

20 (ii) sterilizing the substrate packed in high-pressure resistant plastic bags by autoclaving at a temperature of 121 °C for 30-40 minutes;

(iii) cooling the sterilized substrate to about 25-27 °C;

(iv) opening the plastic bags and mixing shiitake mushroom spawn at about 2 to 10% by dry weight into the sterile substrate in the bags;

25 (v) closing the bags and keeping them at 25-27 °C and 65-70% moisture, at darkness, for 4-12 weeks, whereby the shiitake spawn penetrates and fully spreads throughout the substrate mass;

(vi) opening the bags, removing the blocks formed from the plastic bags, lowering the air temperature to about 12-20°C, and raising the humidity to about 90% under light of about 800-1000 lux;

5 (vii) incubating the blocks with a 12-hour light and 12-hour dark cycles with fresh air exchanges; and

(viii) harvesting the shiitake mushrooms.

29. A method according to claim 28 wherein the mixture in step (i) has a humidity of 65-70%; the closed bags are kept in step (v) for 6-8 weeks in the  
10 darkness at 25-27 °C and 65-70% moisture; and the air temperature in step (vi) is about 16-18°C.

30. The method according to claim 28 wherein the shiitake mushroom is the strain Ile-1, a new and distinct variety of the species *Lentinus edodes* deposited under The Budapest Treaty with the Centralbureau voor Schimmelcultures (CBS)  
15 under Accession No. CBS 112269.

31. The strain Ile-1, a new and distinct variety of the species *Lentinus edodes* deposited under The Budapest Treaty with the Centralbureau voor Schimmelcultures (CBS) under Accession No. CBS 112269